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INTERNAL MEDICINE ALGORITHM HANDBOOK

High-Yield Diagnostic & Treatment Algorithms

ASSESS → DIAGNOSE → TREAT → REASSESS

2026-2027 Edition

For Clinical Practice & Board Examination Preparation

Author: Gisele's Internal Medicine Quick Guide

Swiss-focused, high-yield, algorithm-first
Designed for rapid bedside reference and Facharzt examination review.

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TABLE OF CONTENTS

1. CARDIOLOGY

1.1 Acute Coronary Syndrome (ACS)
1.2 Heart Failure (HF)
1.3 Atrial Fibrillation (AFib)

2. PULMONOLOGY

2.1 Acute Dyspnea - ABC Algorithm
2.2 COPD Exacerbation
2.3 Asthma Exacerbation
2.4 Pneumonia

3. NEPHROLOGY

3.1 Acute Kidney Injury (AKI)
3.2 Hyponatremia
3.3 Hyperkalemia

4. GASTROENTEROLOGY

4.1 Upper GI Bleeding
4.2 Lower GI Bleeding
4.3 Acute Pancreatitis

5. ENDOCRINOLOGY

5.1 Diabetes Mellitus Type 2
5.2 DKA
5.3 Thyroid Disorders

6. INFECTIOUS DISEASES

6.1 Sepsis - 1-Hour Bundle
6.2 Meningitis

7. HEMATOLOGY & ONCOLOGY

7.1 Anemia
7.2 Neutropenic Fever

8. RHEUMATOLOGY

8.1 Rheumatoid Arthritis
8.2 Gout

9. NEUROLOGY

9.1 Stroke
9.2 Seizure

10. EMERGENCY MEDICINE

10.1 Shock
10.2 Anaphylaxis

11. GERIATRICS & PALLIATIVE CARE

11.1 Delirium
11.2 End-of-Life Symptom Management

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1. CARDIOLOGY

1.1 Acute Coronary Syndrome (ACS)

Diagnostic Algorithm

1. ECG within 10 minutes
2. High-sensitivity Troponin (0h / 1h / 3h)
3. Vitals + O2 saturation
4. STEMI -> ST elevation >=1 mm in >=2 contiguous leads
5. NSTEMI/UA -> ST depression, T-wave inversion, or normal ECG

Treatment Algorithm

1. STEMI -> Immediate PCI (goal <=90 min)
2. NSTEMI -> GRACE Score: >140 -> early invasive (<24h); <=140 -> individualized conservative/non-invasive strategy
3. Initial therapy: Aspirin; P2Y12 inhibitor when indicated; anticoagulation/heparin; high-intensity statin
4. Beta-blocker when appropriate
5. Oxygen only if SpO2 <90% or significant hypoxemia

CLINICAL PEARL

STEMI = activate reperfusion pathway immediately. Oxygen is not routine when saturation is adequate.

1.2 Heart Failure (HF)

Diagnostic Algorithm

1. BNP/NT-proBNP
2. Echocardiography -> EF classification

Treatment Algorithm

1. HFrEF: ARNI/ACEi/ARB + evidence-based beta-blocker + MRA + SGLT2 inhibitor
2. Diuretics for congestion
3. HFpEF: SGLT2 inhibitor; BP control; diuretics for congestion; treat comorbidities

CLINICAL PEARL

Use the algorithm as a rapid framework; adapt to severity, comorbidity and local protocol.

1.3 Atrial Fibrillation (AFib)

Diagnostic Algorithm

1. Confirm AF on ECG
2. Assess hemodynamic stability

Treatment Algorithm

1. Unstable -> electrical cardioversion
2. Stable -> rate control: beta-blocker; diltiazem/verapamil when appropriate; digoxin in selected HF patients
3. Rhythm control: antiarrhythmics and/or catheter ablation in selected patients
4. Stroke prevention: assess thromboembolic risk (e.g. CHA2DS2-VASc) and bleeding risk; anticoagulate when indicated

CLINICAL PEARL

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2. PULMONOLOGY

2.1 Acute Dyspnea - ABC Algorithm

ABC Algorithm

1. Airway
2. Breathing
3. Circulation
4. Immediate tests: pulse oximetry; blood gas when indicated; chest X-ray; ECG; targeted labs including D-dimer/BNP when clinically appropriate

Treatment Algorithm

1. Hypoxemia -> oxygen
2. Suspected PE -> clinical probability (e.g. Wells) -> D-dimer when appropriate -> CT pulmonary angiography
3. Suspected HF -> natriuretic peptides/echo -> diuretics if congested
4. COPD/asthma -> bronchodilators +/- steroids
5. Pneumonia -> antibiotics when bacterial infection is likely

CLINICAL PEARL

Acute dyspnea is a syndrome: stabilize first, then identify the dominant mechanism.

2.2 COPD Exacerbation

Core Treatment

1. Oxygen target 88-92% in patients at risk of hypercapnic respiratory failure
2. SABA/SAMA
3. Prednisone 40 mg daily for 5 days
4. Antibiotics when bacterial infection is suspected, especially increased sputum purulence/volume with dyspnea or ventilatory support
5. NIV for acute hypercapnic respiratory failure with respiratory acidosis (e.g. pH <7.35)

Red Flags

1. Exhaustion
2. Worsening acidosis/hypercapnia
3. Altered mental status -> consider ICU/ventilatory support

CLINICAL PEARL

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2.3 Asthma Exacerbation

Acute Management

1. SABA
2. Systemic corticosteroids
3. Oxygen titrated to target saturation
4. IV magnesium sulfate in severe/refractory exacerbation
5. Silent chest
6. Rising CO2 / fatigue
7. Reduced consciousness -> ICU-level care

Red Flags

1. Poor response to initial bronchodilation
2. Exhaustion
3. Hypercapnia or altered mental status

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2.4 Pneumonia

Diagnostic Algorithm

1. Clinical assessment + chest X-ray when indicated
2. CRP / procalcitonin as adjuncts, not standalone decision tools
3. CURB-65: Confusion; Urea >7 mmol/L; RR >=30; low BP; age >=65
4. 0-1 -> usually outpatient if clinically stable
5. 2 -> consider inpatient treatment
6. >=3 -> hospital assessment; ICU based on severity/organ dysfunction

Treatment Algorithm

1. Empiric antibiotics according to local Swiss/institutional guideline and severity
2. Supportive care: fluids when indicated, oxygen for hypoxemia
3. Reassess for sepsis, respiratory failure, complications

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3. NEPHROLOGY

3.1 Acute Kidney Injury (AKI)

Diagnostic Algorithm

1. Rise in creatinine and/or reduced urine output
2. Classify: prerenal, intrinsic renal, postrenal
3. Urinalysis, urine sediment, medication review, renal ultrasound when obstruction is possible

Treatment Algorithm

1. Prerenal: restore effective circulating volume; avoid nephrotoxins
2. ATN: supportive care, optimize hemodynamics, dose-adjust drugs
3. AIN: stop culprit drug; specialist input if severe/persistent
4. GN: nephrology assessment; immunosuppression only after appropriate diagnosis
5. Postrenal: urgent relief of obstruction (catheter/stent/nephrostomy as appropriate)

CLINICAL PEARL

Use the algorithm as a rapid framework; adapt to severity, comorbidity and local protocol.

3.2 Hyponatremia

Diagnostic Algorithm

1. Confirm sodium abnormality
2. Serum osmolality
3. Assess volume status
4. Urine osmolality + urine sodium when needed

Treatment Algorithm

1. Hypovolemic -> isotonic IV fluids
2. Euvolemic/SIADH -> fluid restriction + treat cause; selected cases may need salt/urea or specialist therapy
3. Hypervolemic -> fluid/sodium restriction + diuretics + treat cause
4. Severe symptomatic hyponatremia -> controlled hypertonic saline with close monitoring; avoid overly rapid correction

CLINICAL PEARL

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3.3 Hyperkalemia

Emergency Algorithm

1. ECG immediately
2. IV calcium if ECG changes/instability
3. Insulin + glucose
4. Nebulized beta-agonist
5. Potassium removal: loop diuretic/binders when appropriate
6. Dialysis for severe/refractory hyperkalemia or renal indications

Clinical Pearls

1. Treat membrane toxicity (calcium) separately from potassium shift/removal
2. Recheck potassium and glucose frequently

CLINICAL PEARL

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ECG changes -> calcium first; then shift and remove potassium.

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4. GASTROENTEROLOGY

4.1 Upper GI Bleeding

Initial Assessment

1. Vitals + hemodynamic status
2. Hb, platelets, INR and relevant labs
3. IV access; resuscitation as needed

Treatment Algorithm

1. IV fluids/blood products as clinically indicated
2. PPI therapy for suspected non-variceal upper GI bleeding
3. Transfusion strategy individualized; commonly consider Hb <7 g/dL in stable patients
4. Urgent endoscopy after stabilization; treat variceal bleeding according to protocol

CLINICAL PEARL

Use the algorithm as a rapid framework; adapt to severity, comorbidity and local protocol.

4.2 Lower GI Bleeding

Assessment

1. Hemodynamics + Hb
2. CT angiography for significant ongoing bleeding
3. Colonoscopy when appropriate after stabilization/preparation

Treatment Algorithm

1. Fluids/blood products as indicated
2. Endoscopic therapy when source identified
3. Interventional radiology/surgery for persistent severe bleeding

CLINICAL PEARL

Use the algorithm as a rapid framework; adapt to severity, comorbidity and local protocol.

4.3 Acute Pancreatitis

Diagnostic Algorithm

1. Lipase
2. Ultrasound for biliary cause
3. CT when diagnosis is uncertain or complications/severe disease are suspected

Treatment Algorithm

1. Early supportive fluid resuscitation, individualized to volume status/cardiac/renal function
2. Analgesia + antiemetics
3. Early oral/enteral nutrition as tolerated
4. Treat cause: gallstones, alcohol, triglycerides, drugs, etc.

CLINICAL PEARL

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5. ENDOCRINOLOGY

5.1 Diabetes Mellitus Type 2

Diagnostic Algorithm

1. HbA1c >=6.5%
2. Fasting plasma glucose >=7.0 mmol/L
3. 2-h OGTT glucose >=11.1 mmol/L

Treatment Algorithm

1. Lifestyle intervention + individualized first-line pharmacotherapy
2. GLP-1 receptor agonist and/or SGLT2 inhibitor when ASCVD, HF, CKD, or obesity makes these agents advantageous
3. Combination therapy when needed
4. Insulin when marked hyperglycemia/catabolism or otherwise indicated

CLINICAL PEARL

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5.2 DKA

Emergency Algorithm

1. Fluids
2. Potassium assessment/correction
3. IV insulin
4. Add glucose when plasma glucose falls while ketoacidosis persists
5. Treat precipitating cause
6. Monitor potassium, glucose, ketones/pH and fluid status closely
7. Do not start/continue insulin without addressing significant hypokalemia

Clinical Pearls

1. DKA is a metabolic emergency: insulin stops ketogenesis, while fluids and electrolyte management correct physiology

CLINICAL PEARL

Potassium can fall rapidly after insulin: monitor closely.

5.3 Thyroid Disorders

Hypothyroidism

1. TSH elevated + fT4 low -> primary hypothyroidism -> levothyroxine
2. TSH alone may be insufficient in pituitary disease

Hyperthyroidism

1. TSH suppressed + fT4/fT3 elevated
2. Beta-blocker for adrenergic symptoms
3. Thiamazole/methimazole in appropriate etiologies
4. Definitive radioiodine or surgery in selected patients
5. Thyroid storm -> ICU-level emergency treatment

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6. INFECTIOUS DISEASES

6.1 Sepsis - 1-Hour Bundle

Sepsis - First Hour Priorities

1. Measure lactate
2. Obtain blood cultures before antibiotics if this does not delay therapy
3. Prompt broad-spectrum antibiotics for suspected bacterial sepsis/septic shock
4. Crystalloid resuscitation when hypoperfusion/shock is present; commonly 30 mL/kg initially in septic shock, individualized to context
5. Vasopressors if hypotension persists despite appropriate fluids; norepinephrine is first-line in most adults

Clinical Pearls

1. Source control is essential
2. Reassess perfusion, fluid responsiveness and organ function repeatedly

CLINICAL PEARL

Use the algorithm as a rapid framework; adapt to severity, comorbidity and local protocol.

6.2 Meningitis

Meningitis Algorithm

1. Blood cultures
2. Lumbar puncture unless contraindicated
3. CT before LP only when specific risk features are present; do not delay antibiotics for imaging
4. Start empiric antibiotics promptly
5. Dexamethasone with first antibiotic dose when bacterial meningitis is suspected
6. Consider HSV coverage when encephalitis is possible
7. Adjust antibiotics to age, immune status and local resistance patterns

Red Flags

1. Focal neurologic deficit
2. New seizure
3. Altered consciousness
4. Papilledema -> evaluate before LP

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7. HEMATOLOGY & ONCOLOGY

7.1 Anemia

Diagnostic Algorithm

1. CBC + MCV
2. Ferritin/iron studies
3. B12/folate when indicated
4. Reticulocytes, renal function, inflammation and hemolysis tests as guided by pattern

Treatment Algorithm

1. Iron deficiency -> replace iron and identify source of blood loss
2. B12 deficiency -> vitamin B12 replacement
3. Folate deficiency -> folate after excluding/treating B12 deficiency
4. Anemia of chronic disease/CKD -> treat underlying condition; consider ESA only when indicated

CLINICAL PEARL

Use the algorithm as a rapid framework; adapt to severity, comorbidity and local protocol.

7.2 Neutropenic Fever

Immediate Management

1. Fever >=38.0 C in neutropenia -> medical emergency
2. Blood cultures + targeted cultures
3. Prompt antipseudomonal broad-spectrum antibiotics
4. Assess for central line/source and organ dysfunction

Escalation

1. Persistent fever/high-risk neutropenia -> specialist review
2. Antifungal therapy when prolonged high-risk neutropenia or persistent fever meets criteria
3. Consider G-CSF according to risk and protocol

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8. RHEUMATOLOGY

8.1 Rheumatoid Arthritis

Diagnostic Algorithm

1. Clinical synovitis
2. RF and anti-CCP
3. ESR/CRP
4. Imaging when needed

Treatment Algorithm

1. Early rheumatology involvement
2. Methotrexate commonly first-line DMARD unless contraindicated
3. Treat-to-target with csDMARDs and biologic/targeted agents when needed
4. Vaccination, infection risk and comorbidity review

CLINICAL PEARL

Use the algorithm as a rapid framework; adapt to severity, comorbidity and local protocol.

8.2 Gout

Acute Gout

1. Joint aspiration for crystals when diagnosis is uncertain or septic arthritis must be excluded
2. Serum urate supports diagnosis but can be normal during acute attack

Treatment Algorithm

1. NSAID, colchicine or corticosteroid depending on comorbidity and contraindications
2. Rest/ice and analgesia
3. Long-term urate-lowering therapy (e.g. allopurinol) when indicated; treat-to-target serum urate

CLINICAL PEARL

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9. NEUROLOGY

9.1 Stroke

Stroke Algorithm

1. Immediate glucose + neurologic assessment/NIHSS
2. Non-contrast CT or MRI to exclude hemorrhage
3. Vascular imaging when thrombectomy is possible
4. IV thrombolysis in eligible patients within appropriate time window
5. Mechanical thrombectomy for eligible large-vessel occlusion patients within guideline windows
6. BP control according to reperfusion eligibility

Clinical Pearls

1. Time is brain: activate stroke pathway immediately
2. Do not delay reperfusion therapy for nonessential testing

CLINICAL PEARL

Stroke pathway activation should occur before nonessential delays.

9.2 Seizure

First Seizure / Seizure Emergency

1. Glucose
2. Electrolytes + targeted labs
3. EEG when indicated
4. Brain imaging when structural cause is suspected

Treatment Algorithm

1. Active seizure/status -> benzodiazepine first-line
2. If persistent -> second-line antiseizure medication per protocol
3. Search for reversible causes: glucose, sodium, toxins, infection, stroke
4. Status epilepticus -> emergency/ICU pathway

CLINICAL PEARL

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10. EMERGENCY MEDICINE

10.1 Shock

Shock Classification

1. Hypovolemic
2. Cardiogenic
3. Distributive
4. Obstructive

Treatment Algorithm

1. ABC + monitoring + large-bore IV access
2. Fluids when appropriate; avoid indiscriminate fluid loading in cardiogenic/obstructive shock
3. Vasopressors for persistent distributive hypotension
4. Treat cause: bleeding, sepsis, MI, PE/tamponade/tension pneumothorax, etc.

CLINICAL PEARL

Use the algorithm as a rapid framework; adapt to severity, comorbidity and local protocol.

10.2 Anaphylaxis

Emergency Treatment

1. IM epinephrine immediately
2. Airway/oxygen as needed
3. IV fluids for hypotension
4. Adjunct antihistamines for cutaneous symptoms
5. Corticosteroids are not a substitute for epinephrine and have no proven role in immediate reversal

Clinical Pearls

1. Repeat IM epinephrine every 5-15 min if needed
2. Observe for biphasic reaction according to severity/risk

CLINICAL PEARL

Epinephrine is first-line and should not be delayed for adjuncts.

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11. GERIATRICS & PALLIATIVE CARE

11.1 Delirium

Delirium Algorithm

1. Identify and treat triggers: infection, pain, hypoxia, urinary retention, constipation, drugs, metabolic disturbance
2. Medication review
3. Basic labs and targeted investigations
4. Reorientation, glasses/hearing aids, sleep support, mobilization

Treatment Algorithm

1. Non-pharmacologic measures first
2. Antipsychotics only for severe distress/agitation threatening safety and after reversible causes addressed
3. Avoid routine benzodiazepines unless specific indication

CLINICAL PEARL

Treat the cause and optimize the environment before medication.

11.2 End-of-Life Symptom Management

End-of-Life Symptom Management

1. Pain -> opioids titrated to comfort
2. Dyspnea -> opioids; oxygen only if hypoxemic or relieving symptoms
3. Anxiety/agitation -> benzodiazepines in selected cases
4. Secretions -> anticholinergic agents when distressing

Clinical Pearls

1. Goals are comfort, dignity and proportional symptom relief
2. Review medications and stop non-beneficial preventive treatments when consistent with goals of care

CLINICAL PEARL

Use the algorithm as a rapid framework; adapt to severity, comorbidity and local protocol.